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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,334	04/18/2006	Chojiro Kuriyama	10921.397USWO	9526
52835 7590 03/21/2008 HAMRE, SCHUMANN, MUELLER & LARSON, P.C. P.O. BOX 2902 MINNEAPOLIS, MN 55402-0902				
EXAMINER THOMAS, ERIC W				
ART UNIT 2831		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/576,334

**Applicant(s)**

KURIYAMA, CHOJIRO

**Examiner**

Eric Thomas

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/18/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-11, 15, 19 and 21-29 is/are rejected.
- 7) ☒ Claim(s) 8, 12-14, 16-18, 20, 30-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/18/06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date 4/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

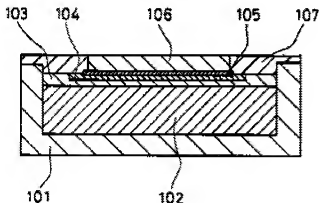
### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 11, 19, 23-24, 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-185460 ('460).



'460 discloses in fig. 1, par. no. 19 to 37, a solid electrolytic capacitor comprising: a porous sintered body of valve metal (102); and a metal case (101) accommodating the porous sintered body.

Regarding claim 2, '460 discloses a dielectric layer (not illustrated) and a solid electrolyte layer (103) which are formed at the porous sintered body, wherein the solid electrolyte layer acts as a cathode, the metal case is made of valve metal, and the metal case and the porous sintered body are electrically connected to each other to act as an anode.

Regarding claim 3, '460 discloses the metal case includes a main plate portion, and a side plate portion standing from a periphery of the main plate portion, the main plate portion and the side plate portion defining a hollow for accommodating the porous sintered body.

Regarding claim 4, '460 discloses the porous sintered body is flat and has a thickness which is smaller than a depth of the hollow of the metal case (see fig. 1)

Regarding claim 5, '460 discloses the porous sintered body includes a first surface, and a second surface opposite to the first surface, the first surface being bonded to the main plate portion of the metal case directly.

Regarding claim 11, '460 discloses part of the solid electrolyte layer is provided on the second surface of the porous sintered body, and wherein the solid electrolytic capacitor further comprises a metallic connecting member made of metal and bonded to said part of the solid electrolyte layer, part of the metallic connecting member serving as a cathode material (see fig. 1, paragraphs 19-37).

Regarding claim 19, '460 discloses the metal case includes an opening which is closed with resin (107).

Regarding claim 23, '460 discloses a method for manufacturing a solid electrolytic capacitor including a metal case and a porous sintered body accommodated in the metal case, the method comprising: a first step of preparing the metal case; and a second step of preparing the porous sintered body.

Regarding claim 24, '460 discloses the second step includes compacting valve metal powder put in the metal case to provide a porous body, and heating the porous body together with the metal case to provide a porous sintered body (see paragraphs 19-37).

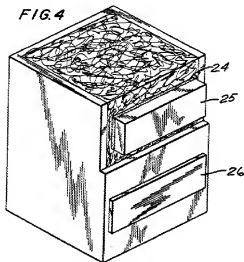
Regarding claim 27, '460 discloses the first step includes subjecting a metal frame to drawing.

Regarding claim 28, '460 discloses the step of forming a dielectric layer and a solid electrolyte layer at the porous sintered body; wherein the porous sintered body includes a bonding surface bonded to the metal case and a non-bonding surface which is not bonded to the metal case, and wherein the step of forming the dielectric layer and the solid electrolyte layer comprises forming the dielectric layer and the solid electrolyte layer at an interior and the non-bonding surface of the porous sintered body.

Regarding claim 29, '460 discloses the metal case includes an opening defined by a plurality of side plate portions, and wherein the step of forming the dielectric layer and the solid electrolyte layer is performed by setting the metal

case to be open upward and pouring treatment liquid for forming the dielectric layer or the solid electrolyte layer into the metal case through the opening.

4. Claims 1, 3, 5, 7, 9-10, 11, 15, 23, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Galvagni (US 5,198,968).



Galvagni discloses in fig. 4, a solid electrolytic capacitor comprising: a porous sintered body of valve metal (12); and a metal case (10) accommodating the porous sintered body.

Regarding claim 3, Galvagni discloses the metal case includes a main plate portion, and a side plate portion standing from a periphery of the main plate portion, the main plate portion and the side plate portion defining a hollow for accommodating the porous sintered body.

Regarding claim 5, Galvagni discloses the porous sintered body includes a first surface, and a second surface opposite to the first surface, the first surface being bonded to the main plate portion of the metal case directly.

Regarding claim 7, Galvagni discloses the metal case is provided with at least one anode terminal (26) extending outward from the metal case.

Regarding claim 9, Galvagni discloses the anode terminal is integrally formed on the side plate portion of the metal case.

Regarding claim 10, Galvagni discloses a metal member (26) made of a same material as the metal case and bonded to the metal case (col. 6 lines 15-29), wherein part of the metal member serves as the anode terminal.

Regarding claim 11, Galvagni discloses part of a solid electrolyte layer is provided on the second surface of the porous sintered body, and wherein the solid electrolytic capacitor further comprises a metallic connecting member (25) made of metal and bonded to said part of the solid electrolyte layer, part of the metallic connecting member serving as a cathode material.

Regarding claim 15, Galvagni discloses the metal case includes an irregular inner surface (inherent surface roughness), and the inner surface is bonded to the porous sintered body.

Regarding claim 23, Galvagni discloses a method for manufacturing a solid electrolytic capacitor including a metal case and a porous sintered body accommodated in the metal case, the method comprising: a first step of preparing the metal case; and a second step of preparing the porous sintered body.

Regarding claim 28, Galvagni discloses the step of forming a dielectric layer and a solid electrolyte layer at the porous sintered body; wherein the porous sintered body includes a bonding surface bonded to the metal case and a

non-bonding surface which is not bonded to the metal case, and wherein the step of forming the dielectric layer and the solid electrolyte layer comprises forming the dielectric layer and the solid electrolyte layer at an interior (housing includes a material covering the exposed surfaces of the capacitor element) and the non-bonding surface of the porous sintered body.

5. Claims 1, 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 61-83025 ('025).

'025 discloses in figs 8-12 pg. 8, line 19 to page 11, line 11, a solid electrolytic capacitor comprising: a porous sintered body of valve metal; and a metal case accommodating the porous sintered body.

Regarding claim 21, '025 a dielectric layer and a solid electrolyte layer formed at the porous sintered body, an anode wire partially extending into the porous sintered body, a metal member electrically connected to the anode wire and including a portion serving as an anode terminal, and a cathode terminal electrically connected to the solid electrolyte layer (figs 8-12 pg. 8, line 19 to page 11, line 11).

Regarding claim 22, '025 discloses the metal case is electrically connected to the solid electrolyte layer, and wherein the cathode terminal is provided at the metal case.

Regarding claim 23, '025 discloses a method for manufacturing a solid electrolytic capacitor including a metal case and a porous sintered body accommodated in the metal case, the method comprising: a first step of



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preparing the metal case; and a second step of preparing the porous sintered body.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6, 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-185460 ('460) in view of JP 56-112716 ('716).

'460 discloses the claimed invention except for the first surface of the porous sintered body is bonded to the main plate portion of the metal case via a bonding material containing valve metal powder.

'716 teaches the use of a bonding material formed from a valve metal powder, wherein the bonding material bonds elements of a solid electrolytic capacitor together (see page 2 lower left column, line 7 to lower right column, line 19, and fig. 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to bind the porous sintered body to the main plate portion of the metal case using a bonding material containing valve metal powder, since such a modification would improve the mechanical connection between the capacitor element and the metal case.

Regarding claim 25, '460 discloses the claimed invention except for the second step includes bonding a porous body of valve metal powder into the metal case by using a bonding material containing valve metal powder, and heating the porous body with the metal case to provide a porous sintered body.

'716 teaches the use of a bonding material formed from a valve metal powder, wherein the bonding material bonds elements of a solid electrolytic capacitor together (see page 2 lower left column, line 7 to lower right column, line 19, and fig. 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor element with a second step that includes bonding a porous body of valve metal powder into the metal case by using a bonding material containing valve metal powder, and heating the porous body with the metal case to provide a porous sintered body, since such a modification would improve the mechanical connection between the capacitor element and the metal case.

Regarding claim 26, '460 discloses the claimed invention except for the second step includes bonding a porous sintered body of valve metal power into the metal case by using a bonding material containing a valve metal.

'716 teaches the use of a bonding material formed from a valve metal powder, wherein the bonding material bonds elements of a solid electrolytic capacitor together (see page 2 lower left column, line 7 to lower right column, line 19, and fig. 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor element with a second step that includes bonding a porous sintered body of valve metal power into the metal case by using a bonding material containing a valve metal, since such a modification would improve the mechanical connection between the capacitor element and the metal case.

***Allowable Subject Matter***

8. Claims 8, 12-14, 16-18, 20, 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or suggest (in combination with the other claim limitations) a solid electrolytic capacitor wherein the metal case is provided with a plurality of anode terminals extending outward from the metal case (claim 8); a solid electrolytic capacitor wherein part of the metallic connecting member extends from inside to outside of the metal case by passing through the cutout (claim 12); a solid electrolytic capacitor wherein said part of the solid electrolyte layer on the second surface is formed at a region surrounded by the insulating layer (claims 13-14); a solid electrolytic capacitor wherein the metal case includes an inner surface to which a metal member made of valve metal is welded to form a projection (claim 16); a solid electrolytic capacitor wherein the metal case includes an inner surface formed with a plurality of recesses and a plurality of burrs corresponding to the recesses (claim 17); a solid

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electrolytic capacitor wherein the metal case includes an inner surface at which a plurality of projections are formed by partially bulging the metal case (claim 18); a solid electrolytic capacitor wherein the metal case includes an outer surface which is at least partially covered with resin (claim 20); a method for manufacturing a solid electrolytic capacitor further comprising the step of forming an insulating layer at a periphery of the nonbonding surface of the porous sintered body before forming the solid electrolyte layer (claim 30); and a method for forming a solid electrolytic capacitor wherein part of the metal member is extended out of the metal case to act as a cathode terminal (claims 31-33).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Thomas whose telephone number is 571-272-1985. The examiner can normally be reached on Monday - Friday 5:30 AM - 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric Thomas/  
Primary Examiner, Art Unit 2831